

of *Nepenthes*. An ash analysis of this interesting plant would show the proportion of sulphuric acid at once; and as we are not in possession of an analysis of the ash of *Nepenthes*, which in other respects might be of interest, I take the liberty of asking those gentlemen who are in the possession of *Nepenthes*' plants to preserve the clippings of branches, &c., which I shall be glad to receive as materials for an ash analysis.

XVII.—*Contributions to the Botany of South America.*

By JOHN MIERS, Esq., F.R.S., F.L.S.

[Continued from p. 39.]

MARGARANTHUS.

AMONG the various collections of Mexican and South American plants, I have not been able to find any specimen corresponding with this genus, of which indeed nothing appears to be known, except the description given of it by Prof. Schlechtendal, and the figure drawn by that able botanist from living specimens raised in Halle from seeds received from Mexico. On comparing this with *Physalis* and its allied genera, it will be seen to differ from them in the smaller size and pale blue colour of its flowers, and particularly in the great contraction of the mouth of the corolla, which gives it a globular instead of a campanular form. The calyx is more entire on its margin, and like *Physalis* enlarges, becomes vesicular, and incloses a small globular berry with aqueous juice, which becomes exsuccous. I have here amended its character as contrasted with its allied genera.

MARGARANTHUS, Schl.—*Calyx* urceolato-tubulosus, 5-angularis breviter 5-dentatus, persistens et accrescens. *Corolla* urceolato-globosa, 5-sulcata, imo attenuata, medio ventricosa, ore valde contracta, margine dentibus 5 minutis instructa, intus villosula. *Stamina* 5, æqualia, inclusa, corollæ dimidio breviora; *antheræ* conniventes, 2-lobæ, dorso affixæ, rima duplici longitudinaliter dehiscentes. *Ovarium* globosum, 2-sulcatum, disco carnosio annulari basi immersum, 2-loculare, placentis multiovulatis, medio dissepimenti utrinque adnatis. *Stylus* simplex, apice attenuatus. *Stigma* truncatum. *Bacca* substipitata, 2-locularis, exsucca, pericarpio membranaceo, polysperma, calyce inflato, ovoideo, reticulato-venoso, dentibus ore clauso laxè inclusa. *Semina* orbiculato-reniformia. *Embryo* in albumen semipellucidum curvatus.—Herba Mexicana dichotome ramosa, foliis alternis, ovatis, vel ovato-lanceolatis, acutis, petiolatis; floribus axillaribus, solitariis, parvulis, pedunculatis, nutantibus, sordide cærulescentibus.

I. *Margaranthus solanaceus*, Schl. (Hort. Halens. i. tab. 1);—

valde ramosus, foliis inferioribus obovatis, acutis, imo rotundatis, obsolete dentatis, utrinque fere glabris, venis subpilosis, margineque ciliolatis, superioribus lanceolatis, petiolo canaliculato sparse pubescente.—Mexico (Papantla, *Schiede*).

This plant appears to have very much the habit of a *Physalis*; its lower leaves are 4 inches long, $2\frac{1}{2}$ inches broad, on a petiole of $\frac{1}{2}$ to $\frac{5}{4}$ inch; the upper leaves are $2\frac{1}{4}$ inches long, 10 lines broad, on a petiole of half an inch; the peduncles are 1 line long; the calyx 1 line, and the corolla 2 to $2\frac{1}{2}$ lines in diameter; the calyx increases to the size of half an inch, is globular in form, reticulate, and incloses a berry of 3 lines in diameter.

NECTOUXIA.

This genus appears to have been little known hitherto except from the details given by Prof. Kunth (Nov. Gen. iii. p. 10), where a figure of *Nectouxia formosa* is given in plate 193 of that work. On comparing a specimen of this genus in the herbarium of Sir Wm. Hooker, I am led to conclude it to be a second species, as I can hardly imagine that so accurate an observer could have been mistaken. In this species the difference lies in the calycine segments being much narrower, in the greater length of the corolla, in the segments of the border being narrower, in the lower insertion of the stamens, in the longer and more linear anthers, and more especially in the singular expansion of the upper portion of the filament, and finally in the exertion of the style. Kunth describes his plant as being herbaceous and not higher than 8 inches, whereas this appears to be a much taller plant. *Nectouxia* evidently approaches very closely to the genus *Salpichroma*, and were it not for the remarkable peculiarity of the prominent corona in the mouth of the corolla, it could hardly be distinguished from that genus. Like *Salpichroma* it possesses the character of its flowers becoming black in drying: the expansion of its filament is also another distinguishing feature. I have not been able to examine its perfect fruit, but it is evidently a berry: the form and structure of its ovarium quite correspond with that of *Salpichroma*. The following is its amended character:—

NECTOUXIA. Char. emend.—*Calyx* 5-partitus, laciniis æqualibus, erectis, linearibus, acutis, persistens. *Corolla* hypocra-teriformi-tubulosa, tubo 5-nervi, 5-angulato, superne paulo ampliato, calyce 2-plo longiore, limbo patente, 5-partito, laciniis æqualibus, oblongis, acuminato-obtusiusculis, æstivatione induplicato-valvatis, fauce in coronam brevem urceolatam exertam 10-nervem 10-dentatam producta. *Stamina* 5, inclusa, æqualia: *filamenta* brevia, supra tubi medium inserta, com-

pressa, sæpe (an semper?) superne in laminam membranaceam panduræformem apice acutam subito dilatata: *antheræ* lineari-oblongæ, erectæ, mucronulatæ, medio dorsi affixæ, 2-loculares, loculis parallelis, usque ad medium disjunctis, rima longitudinali antice dehiscentibus. *Ovarium* conicum, disco parvo carnoso impositum, 2-loculare, placentis dissepimento utrinque adnatis, multiovulatis. *Stylus* filiformis, tubo corollæ excedens. *Stigma* exsertum clavatum emarginato-2-lobum. Cetera ignota.—Herbæ *perennes* Mexicanæ *fætida*; folia *petiolata sparsa, superiora subgemina, cordata, integra*. Flores *solitarii, extra-axillares, pedunculati, cernui*. Corolla *flava, siccatione nigrescens*.

1. *Nectouxia formosa*, H. B. K. iii. 10. tab. 193;—herbacea, caule angulato; foliis cordatis, ovatis, acutis, hirtellis; calyce piloso-hispido, corolla flava, staminibus tubo haud superantibus.—Mexico (Real del Monte).

This plant is described as being scarcely 8 inches in height with a fusiform root: its leaves, sometimes geminate, are from $1\frac{1}{2}$ to $1\frac{3}{4}$ inch long, and 1 to $1\frac{1}{4}$ inch broad, upon a petiole 9 to 10 lines in length: the peduncle of its solitary axile flower is half an inch long, its calycine segments 6 lines, the tube of its corolla 10 lines, the lobes of its border 7 lines and $3\frac{1}{2}$ lines broad.

2. *Nectouxia bella* (n. sp.);—herbacea, caule striato; foliis cordatis, ovatis, acutis, utrinque sparse et mollissime pubescentibus; flore cernuo, staminibus infra faucem corollæ omnino inclusis, filamentis superne in ligulam latam membranaceam expansis.—Mexico (Real del Monte, *Coulter*, no. 1270;—circa Toluca, *Andrieux*, no. 180).

Although found near the same locality, and in no way differing in the shape of its leaves, its herbaceous stem and tapering root, this plant offers many points of structure at variance with the foregoing species, if we depend upon the usually accurate descriptions of Prof. Kunth. It is double its height, and its leaves are proportionally larger, being often geminate, $2\frac{3}{4}$ inches long, 2 inches broad, upon a petiole $\frac{3}{4}$ inch in length; the peduncle of its axillary flower is 1 inch long, its narrow linear acute calycine segments are $\frac{1}{2}$ to $\frac{3}{4}$ inch, the tube of its corolla 1 inch to $1\frac{1}{4}$ inch in length, and 2 to 3 lines in diameter at the mouth; the lobes of its border are lanceolate, oblong, very patent, and $\frac{5}{4}$ inch long; the corona, with ten obsolete teeth, protrudes 2 lines beyond the throat; the stamens, inserted somewhat above the middle of the tube, are 3 lines long; the ovarium is elongated and pointedly conical, 3 lines long, $\frac{3}{4}$ line at base, and is seated on a pro-

minent annular ring, and the style and stigma do not exceed the extremity of the corona*.

NICANDRA.

This genus of Adanson, on account of its augescent vesicular calyx, has been placed near *Physalis*, but it exhibits much dissimilarity in its habit, in the blue colour and æstivation of its large bell-shaped flowers, and in the structure of its fruit: There is only one recorded species, well known to our gardens, the old *Atropa physaloides*, Linn., which is manifestly related to *Atropa* and *Anisodus* on account of the form and imbricate æstivation of its corolla and the nature of its fruit; it differs however from both these genera in the very peculiar character of its calyx, in which respect it approaches *Juanulloa*, but it does not correspond with that genus either in its habit, the structure of its corolla, or the form of its embryo. It therefore takes its position in the tribe *Atropeæ* (Ann. Nat. Hist. 2nd Ser. ii. 166), and I annex an emended character in conformity with my own observations made upon the living plant.

NICANDRA, Adans. Char. emend.—*Calyx* magnus, 5-partitus, laciniis sagittato-cordatis, acutis, erectis, longitudinaliter replicatis, marginibus infra medium valvatim conniventibus, hinc pseudo-alatis, angulis basalibus in calcaria 5 uncinata acutissima productis, persistens et augescens. *Corolla* magna, campanulata, limbo brevi 5-partito, lobis latis, rotundatis, patentireflexis, æstivatione imbricata. *Stamina* 5, æqualia, erecta, corollæ triplo breviora, *filamenta* basi tubi e glandulis totidem trigonis utrinque auriculatis lanato-tomentosis orta, hinc fornicata, erecta, et incurvata; *antheræ* ovatae, 2-loculares, imo cordatae, in sinu apicifixæ, loculis parallele connatis, rima marginali longitudinaliter dehiscentibus. *Ovarium* obovatum, disco carnosio crenulato insidens, 5-loculare, ovulis plurimis, placentis incrassatis axi adnatis. *Stylus* brevis, longitudine staminum. *Stigma* quinquelobum, lobis obtusis, glanduloso-papillois, in capitulum aggregatis. *Bacca* subsicca, spherica, calyce globoso, membranaceo, valde reticulato, aucto, 5-gono inclusa, 3-5-locularis, pericarpio tenuissimo fragili irregulariter rumpente. *Semina* plurima, reniformia, *hilo* in sinu laterali; *testa* scrobiculato-favosa. *Embryo* teres, intra *albumen* carnosum spiraliter arcuatus, *cotyledonibus* semiteretibus, *radicula* angulo basali spectante, hiloque evitante, duplo brevioribus.—Herba *suffrutescens* *Peruana*, caulibus *plurimis*, *ramosis*, *deciduis*; foliis *alternis*, *superioribus* *geminis*, *oblongis*, *acutis*, *sinu-*

* A representation of this species, with sectional details, will be given in plate 40 of the 'Illust. South Amer. Plants.'

ato-incisis, in petiolum longum decurrentibus, glaberrimis; floribus pedunculatis, solitariis, extra-axillaribus, cernuis, pedunculo fructifero elongato, erecto, apice recurvo.

1. *Nicandra physaloides*, Gaertn. ii. 237. tab. 131; Bot. Mag. 2458. *Atropa physaloides*, Linn.; Jacq. Obs. iv. tab. 98. *Physalis daturæfolia*, Lam. Ency. ii. 102. *Calydermos erosus*, R. & P. ii. 44. *Alkekengi*, Feuillé, Obs. 724. tab. 16.—*Planta omnino glabra, radice fibrosa, perennante; caulibus frondosis, ramosissimis, annuis; foliis glabris, oblongis, acutis, sinuato-incisis, in petiolum longum decurrentibus; calyce reticulato, nitido, aucto; corolla magna, azurea, campanulata, fundo albedo, maculis 5 obscure cæruleis notata.*—Peruvia, v. v.

This plant is well known in most tropical countries, where it has become almost indigenous; it is cultivated in the open air in Kew Gardens, from which source an ample opportunity has been afforded of examining its structure in a living state. It grows there to the height of about 5 feet; in warmer climates it attains a height of 6 or 8 feet; its leaves are oblong, irregularly inciso-sinuate on the margin, with an acute summit, cuneate at base, and decurrent on the channeled petiole; they are about $6\frac{1}{2}$ inches long, upon a petiole of $1\frac{1}{2}$ inch, are about 4 inches broad, and quite glabrous. The peduncle is pendent, about $\frac{3}{4}$ inch in flower, growing to a length of $1\frac{1}{2}$ inch in fruit, when it becomes erect and suddenly deflexed at its thickened apex: the calyx is 9 lines long from its base to the point of its segments, or 1 inch long including its basal lobes; the segments are erect, with their margins undulated and connivent with the adjoining ones for their lower half, salient, producing the appearance as if it were 5-winged; in fruit it preserves the same form, becoming almost globular and vesicular, and of very reticulated texture, with the points of its segments conniving and wholly concealing the berry. The corolla is about twice the length of the calyx, broadly campanular, swelling gradually upwards from its middle; the lobes of the border are rounded, somewhat erect and overlapping each other at the base, and suddenly revolute towards their apex, which is very obtuse, with a slight emarginature on each side of a short central point; the stamens are scarcely one-third of the length of the corolla, arising from as many glands adnate to the base of the tube, forming a kind of fornix about the ovarium, and clothed with densely woolly brachiate hairs; the filaments above are quite smooth, erect, and incurved at the apex; the style is short, erect, surmounted by a large, globular, woolly or papillose stigma, composed of five segments closely connivent; the ovarium is seated upon a small crenulated yellow gland. The berry is quite globular, about 8 lines in diameter, with three to five cells of unequal

size, having slender dissepiments, and being filled with an aqueous juice and numerous seeds attached to a large central placentation; the berry when fully ripe becomes dry with its pericarp of thin and brittle texture, being easily ruptured by an irregular laceration. The seeds are flattened, reniform and rounded, about 1 line in diameter.

CLIOCARPUS.

Among Gardner's Brazilian plants I have noticed one, which in the shape of its calyx, in the structure of its fruit, and especially in the form of its embryo, comes near *Nicandra*, but it disagrees in having a woody stem and a wholly different habit; its calyx does not, as in *Nicandra*, become thin, membranaceous and reticular, but is thick, somewhat fleshy, and densely covered with stellate tomentum, approaching in its form more to that of *Juanulloa*, although the shape of its embryo is that of the former genus. Its flower is yet unknown, as the only specimens collected were in fruit. On account of the structure of its seed I have placed it for the present next *Nicandra*, but its exact position cannot be known until we are acquainted with its floral characters. I have called the genus *Cliocarpus* from κλείω, *claudio*, καρπὸς, *fructus*, on account of its fruit being wholly concealed within the enlarged enveloping calyx. The following may be taken for its generic character until more ample details can be obtained:—

CLIOCARPUS (gen. nov.). Flos ignotus.—*Calyx* fructifer auctus, 5-partitus, laciniis lanceolatis, acutis, longitudinaliter subreplicatis, marginibus valvatis conniventibus, hinc tubum ventricosum sinuoso-5-angulatum, ore 5-dentato fere clausum, simulantibus, angulis imo saccatis. *Bacca* omnino inclusa, globosa, 2-locularis. *Semina* plurima, placentis dissepimento adnatis affixa, reniformia, compressa; *testa* scrobiculata, hilo in sinu laterali. *Embryo* teres, in *albumen* carnosum spiraliter arcuatus, *cotyledonibus* semiteretibus, *radicula* angulo basali spectante, hilo evitante, sub-3-plo brevioribus.—*Frutex Brasiliensis, dense stellato-tomentosus*; foliis *alternis, oblongis, integris, breviter petiolatis*; floribus *extra-axillaribus, binis vel solitariis, pedunculo fructifero cernuo*.

1. *Cliocarpus Gardneri* (n. sp.);—foliis obovatis, acuminatis, basi obtuse rotundatis, crassiusculis, supra pubescentibus, subtus dense cano-tomentosis, pilis stipitato-stellatis.—Brasilia, ad Arraial das Mercês, Prov. Minas Geraës, v. s. in *herb. Hook.* (Gardner, 5042).

This is described as a shrub 6 to 10 feet high; its branches are woody and covered with yellowish tomentum; the leaves are

oblong, acuminated gradually, and sharply attenuated at the apex, rounded or subtruncated, and somewhat inæquilateral at base, 3 inches long, $1\frac{5}{8}$ inch broad, upon a thick short petiole of 2 lines in length. The flowers, sometimes in pairs, grow laterally at the base of the petiole; the peduncle is refracted, $\frac{3}{4}$ to 1 inch long, and covered with long glandular hairs mixed with shorter stellate pubescence; the calyx, also tomentose, is 8 lines long, 6 lines across, inclosing a small globular berry 4 lines in diameter.

XVIII.—*On the Animal of Kellia rubra.*

By W. CLARK, Esq.

To the Editors of the Annals of Natural History.

GENTLEMEN, Beacon Hill, Exmouth, Devon, July 5, 1849.

I VENTURE to trouble you with a few observations in reply to Mr. Alder's last paper, in the 'Annals' of this month, on the subject of *Kellia rubra*, and then I hope to retire from the field. I have had ample scope allowed; and though you have not interrupted the discussion, by issuing the editorial veto,

"Claudite jam rivos, pueri, sat prata biberunt,"

still we ought to keep in mind the phrase,

"Est modus in rebus."

Mr. Alder still continues to rely on the point that the regular ingress and egress of the branchial currents, and the regulation thereof, in the bivalve mollusca, are produced by the action of the vibratile cilia, which clothe the branchial laminæ; I differ from his views, and think this doctrine entitled to no confidence, and that the cause is inadequate to the effect propounded.

The branchial cilia have very different functions; their sole use is to beat and subdivide the water, to facilitate the elimination of the vital principle therefrom, *after it has been admitted into the branchial cavity* by the opening of the valves of the animal, by the relaxation of the adductor muscles, and from whence the impure water is discharged by their contraction at the same points, ventral or siphonal, or a combination of both, as the animal may happen to be closed, or open mantled, at which it enters, and a fresh supply of the pure element is received to fill the vacuum caused by its expulsion.

Great misapprehension has arisen from confounding the functions of two different sets of organs, attributing to the one the uses of the other, the real functions of which have altogether been unnoticed.

The assumed regularity of the admission and discharge of the